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ABSTRACT

Enterprise Finance and Investment in Listed Hungarian Firms

This Paper studies the financing of enterprise investment in listed Hungarian firms during the first years of transition. These firms were selected for listing on the exchange and presumably had better access to external capital. In particular, we look for evidence of financial constraints that limit real investment and attempt to identify the effect of different ownership and governance structures. The empirical results indicate significant financial constraints even among the better-known firms in the period from 1992 to 1998. Consistent with studies from other countries, we find evidence that foreign-owned firms do not suffer from limited external finance. Previous leverage can strain investment, suggesting that hard budget constraints are binding. State ownership does not alleviate capital constraints and larger firms do not appear to be less constrained than the smaller firms, which contrasts with the evidence in Western countries.

JEL Classification: G31 and P23

Keywords: financial constraints, foreign investment, governance and transition

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1. Introduction

This paper considers the ability of better-known Hungarian enterprises to access external funds for investment in the early years of the transition. Specifically, in the first decade of transition, were Hungarian firms able to invest only to the extent that they could generate resources internally? This paper also investigates whether the ownership structure of a firm affects its ability to finance investment and obtain capital. Did their ownership and governance structures play a role in their access to capital? According to many commentators, domestic Hungarian firms have experienced severe credit financing conditions since the credit crunch in 1994 and 1995, which was followed by high real interest rates and limited financial intermediation to the private sector. In contrast, foreign-owned firms are believed to be able to obtain financial resources through foreign direct investment (FDI).

Corporate investment tends to be funded primarily by internal funds in both developing and developed countries. Under the assumption of efficient capital markets, firms having projects that generate positive net present value will always have access to external funding. However, in inefficient markets or in the presence of significant informational and agency problems, access to external capital is either costlier than internal finance or simply unavailable. Thus, financial constraints refer to whether firms are able to finance their desired level of investments. To assess the situation in Hungary, we choose a sample of firms that, from an *ex ante* perspective, should have a low probability of suffering from asymmetric information, namely the set of listed Hungarian firms. This subset includes many of the

better, larger firms that enjoy the highest visibility among domestic and foreign investors. On the other hand, broadly held firms may encounter agency costs, either between managers and shareholders or between inside and outside investors. Thus, we will verify whether ownership and governance structures affect access to investment financing.

To identify the presence of financial constraints, we analyze the sensitivity of corporate investment to the availability of internal finance, after controlling for the desired level of capital investment by including a proxy for marginal profitability of investment, that is, a proxy for Tobin's Q (Fazzari *et al.*, 1988). If a firm has full access to external capital, internal financial variables should not be a significant determinant of real investment. Our first result is that cash flow has a positive and highly significant effect on investment in all specifications, which may be evidence of financial constraints. Even large, listed Hungarian firms appear to be dependent on internal resources for investment financing. The second main result is that the subset of foreign-owned firms, and possibly larger Hungarian firms, do not appear to be financially constrained.

Testing for excess sensitivity of investment to internal cash flow has been subject to recent criticism (Kaplan and Zingales, 2000; Fazzari *et al.*, 2000; Moyen, 2002). While agreeing that a positive sensitivity is a sign of financial constraint, Kaplan and Zingales (2000) show that a larger positive coefficient cannot be interpreted unambiguously as a sign of greater financial constraints because other factors, e.g., the marginal productivity of investment, affect the cash flow coefficient. Our results are strong enough not to be subject to this criticism. Specifically, we find that a subset of firms, i.e., those with a specific governance structure have zero sensitivity of investment to cash flow, while the rest of the firms in the sample exhibit positive sensitivity. In this case, even in the Kaplan-Zingales

framework, an insignificant cash flow coefficient in the investment equation for a subset of firms is consistent with a lack of financial constraints for this group, compared with the rest of the sample.

The presence of financial constraints may not imply that the Hungarian financial system was inefficient; the result may be due to weak governance in large enterprises. Perhaps the efficient strategy for institutional investors was to force tight budget constraints on Hungarian enterprises in this transitional period, in order to induce enterprises accustomed to full external funding of losses to operate within budget constraints. In fact, a complete lack of financial constraints would indicate a failure of external discipline. Even in the early transition years when Hungarian banks found themselves in financial distress, evidence indicates that they did not gamble as did banks in other transition countries (Perotti, 1993), but rather they based loans on financially sound criteria (Bonin and Schaffer, 1995, and Schaffer, 1996).

Our results suggest that weak governance may have been the main cause of financial constraints. We find evidence of a strong dualism between foreign-owned firms, which invest significantly more and do not suffer from limited external finance, and the rest of the sample.² In contrast, state ownership does not ensure access to capital. We also find evidence that previous leverage constrains investment, which suggests that hard budget constraints are binding. Larger firms seem to be less constrained and invest more, although the evidence is not conclusive. These results are consistent with evidence presented in Lizal and Svejnar (2001) for a large data set of Czech firms. These authors find that private ownership is associated with better performance and that foreign ownership has an additional positive impact.

This paper is organized as follows. The next section presents an interpretation of the process of financial transition in Eastern Europe and characterizes Hungary as a country that succeeded in achieving macroeconomic stabilization and the restructuring of its banking sector by strict, but gradual reforms. This section also discusses the possibility that credit constraints may have been related to the tightening of budget constraints. The third section describes the data and introduces the methodology. The fourth section reports the empirical results. The final section concludes with policy implications.

2. Financial Transition in Eastern Europe and the Hungarian Case

The transition to a functioning financial market in Eastern European countries resulted in two different types of experiences. Some countries, mostly in Central Europe and in the Baltic States, achieved stabilization by a steady, credible monetary and credit policy and succeeded in restarting growth at an early stage. In the former Soviet Union (FSU) and some Southeast European countries, e.g., Romania and Bulgaria, financial instability persisted, accompanied by a protracted slump, and often led to a major banking crisis. Although these experiences were interpreted initially in terms of monetary policy credibility, the ultimate determinants of success along this divide depend on the degree of adjustment at the microeconomic level. In principle, a successful financial transition requires a move from a politicized, centralized funding system to a decentralized system based on commercial transactions, and also requires enterprises to restructure in order to ensure profitability.

The early experiences with financial policy in all countries fits a model of reform policy in which the ability of the authorities to force restructuring on enterprises is uncertain.

Due to a critical mass of inertial behavior, the decentralization process may fail (Roland and Verdier, 1994; Perotti, 1996). When enterprises do not restructure, financial losses accumulate on their balance sheets. Chronic losses require financing by redistribution and create serious unbalances that force a reversal to a more centralized approach. A collective bailout ultimately produces financial instability because the loss of credibility undermines the attempts at stabilization. As a result, inflation soars while enterprise capital is dissipated³. The too-many-to-fail model fits the facts in the first years of transition in the Eastern Balkan states and in the FSU countries outside the Baltic States.⁴

Since such bailouts fail to induce restructuring and result in a weaker capacity to generate new real credit because of depositor flight and greater money velocity, governments shifted to a selective support policy. Political influence was used to induce the banking sector to lend to select enterprises. Firms that were either too large or too powerful, politically and economically, to be allowed to fail persisted in their resistance to restructuring, relying on their ability both to resist payment of debts and to attract more soft credit. In this stage, the banking sector took on the task of allocating implicit subsidies. Preferential allocation of credit created scarcity of external finance for new or restructured enterprises. In contrast, some countries in Central Europe and in the Baltic States resisted the pressure for a collective bailout and imposed tight monetary policy leading to a painful, but brief, output contraction.

Calvo and Coricelli (1993) argue that this tight money policy caused a deflationary credit crunch that stifled economic activity. Yet a credit crunch cannot produce a sustained recession if firms respond by substituting internal cash flow for external finance and by cutting costs and shifting sales to solvent clients. In fact, scarce credit may be necessary to induce enterprise adjustment. The *ex post* evidence suggests that countries that imposed tight

stabilization suffered a sharper, but shorter, output fall and started growing again sooner, while those that acquiesced to reflationary policies suffered a prolonged slump and repeated financial crises.

However, Hungary remains somewhat unique in that its initial conditions were favorable, with low monetary overhang and an orientation to Western markets. On the macroeconomic level, Hungary experienced an initial, but modest, drop in production when prices were liberalized in January 1991. The acceleration in inflation was also less pronounced than in most other transition economies, although inflation proved quite resilient throughout the 1990s. Sustained inflationary pressure may be due to the industrial recovery in 1992 that was arguably sustained by a generous use of bank credit. As a result, by late 1993, Hungarian banks were in serious trouble and the country needed a series of bank recapitalizations to compensate for massive loan losses from 1993 to 1995⁵. Of course, slow enterprise adjustment may have been due to more favorable initial conditions, which allow a more gradual approach to reform by delaying pressure for microeconomic adjustment. In any case, the result was an expensive bank rescue, although not as costly as in some transition countries, and some delay in rebuilding a stable, efficient banking sector (Bonin and Schaffer, 1995, Gray *et al.* 1996, Sgard, 2001).

By the end of 1992, about 30% of the total credit to the enterprise sector was qualified and about 20% was classified as irretrievable. In early 1993, the government removed over HUF 120 billion of bad loans from the banks' balance sheet and implemented measures for a restrictive monetary policy. Real credit fell in 1994; in addition to the resulting liquidity crisis, a legislative shock therapy followed, due to a severe tightening of the bankruptcy rules (Bonin and Schaffer, 1995, Gray *et al.*, 1996). As a consequence, a large shock on the supply

side of economy accompanied a gradual recovery of the banking sector. By the end of 1995, most of Hungary's state banks had been privatized and sold to foreign banks. Export-driven growth resumed after 1995. With the influx of foreign capital and bank recapitalization, the credit crisis ended and a strong expansion in credit growth, e.g. 20% real growth in 1997, followed. In 1998, capital flows were liberalized and an investment boom occurred. Credit growth since 1996 corresponded with a noticeable fall in the aggregate gross savings of the enterprise sector, from 12.4% of GDP in 1995 to 10.3% in 1996, suggesting that firms were more successful, or more comfortable, in raising external funds. The increase in real credit since 1996 implies that banks have taken over a role in the allocation of financial resources and possibly in the strengthening of enterprises' governance.

3. Data and Model Description

The corporate finance literature identifies agency conflicts and asymmetric information as the major factors in capital constraints. Jensen and Meckling (1976) assert that moral hazard problems raise the cost of external finance. Myers and Majluf (1984) attribute the results to asymmetric information. In both cases, if firms have insufficient internal funds, i.e. liquidity, they invest less than is optimal as measured by Tobin's Q. Under such circumstances, an increase in internal cash flow is reflected immediately in an increase in investment. Consequently, firms with corporate governance structures that ensure proper monitoring of inside information and management decisions will have better access to capital markets.

Enterprises in which banks, foreign investors or the government have a large ownership stake may find it easier to obtain external financing. Private institutions can mitigate information asymmetry problems through close supervision; they may also provide funding directly to ensure that investment is allocated efficiently. In addition, the government can soften the budget constraint, perhaps due to some political interest in maintaining employment at the cost of profitability.⁶ On the other hand, government ownership may destroy incentives and reduce the chance of obtaining credit. Moreover, large inside investors may create conflict with other investors and, if they are financially constrained themselves, their control stake will cause others to avoid funding the firm's investment program. Ultimately, this issue must be settled empirically.

Our general investment regression is based on the work of Hoshi, Kashyap and Scharfstein (1994). The basic form of our investment equation is given by:

$$\frac{TI_t}{TA_t} = \beta_1 + \beta_2 MBE + \beta_3 \frac{CF_t}{TA_t} + \beta_4 \frac{FA_{t-1}}{TA_t} + \beta_5 \frac{TD_{t-1}}{TA_t} + \beta_6 SIZE_t + \varepsilon \quad (1)$$

The dependent variable consists of TI_t , which is the change in the level of fixed assets minus depreciation, normalized by the end-of-period total assets, TA_t . Regarding the explanatory variables, we use the market-to-book value of equity, MBE , as a proxy for Tobin's Q,⁷ to control for the desired level of investment and to isolate any additional effects of internally generated finance on investment. This ratio is a good proxy for the average value of Q because a high market-to-book ratio implies that the firm is perceived as having good investment opportunities. Ideally, we should use the marginal value of Q but no such measure is available.⁸

The second explanatory variable is cash flow, CF_t , which is the primary measure of internal finance.⁹ As additional control variables, we include leverage, a proxy for capital intensity, and various proxies for enterprise size. Theoretical predictions for the effect of the stock of debt, TD_t , in an investment equation are ambiguous. On the one hand, high leverage creates agency conflicts and thus makes it harder to raise external finance. On the other hand, leverage is a sign of credit availability for firms in transition countries, particularly if their levels of debt are low.¹⁰ We use various measures of firm size, $SIZE_t$, to investigate whether larger firms appear to benefit from greater visibility and are thus able to raise investment finance more easily. We also introduce a measure of capital intensity, FA_t , namely fixed assets, in order to capture both an industry effect and the possible effect of tangible assets on the ability to raise funding. We normalize all balance sheet variables by the end-of-period total assets TA_t .

The equation that we estimate includes ownership and governance variables to test for the influence of ownership structure on capital constraints. We also investigate whether investment exhibits a differential sensitivity to our measure of average Q for firms with different ownership structures. This test, used in Perotti and Gelfer (2002), is based on the presumption that better investment should be correlated more highly with the market perception of its profitability (Scharfstein, 1998).

The primary source of balance sheet and income statement data is the Kopint Datorg database. Data on the market value firms were acquired from the Budapest Stock Exchange (BSE). We construct a panel over a seven-year period with all financial amounts given in Hungarian forints (HUF). Banks and other financial firms are excluded. We also dropped a few companies with incomplete data from the sample. As a result of these choices, our

sample is biased towards larger, better known, and potentially more successful Hungarian companies. We are left with data for 56 Hungarian firms during the period 1992 to 1998.

When analyzing a cross section over time, ordinary least squares (OLS) models provide biased and inconsistent estimators in the presence of unobserved heterogeneity among firms. In order to correct for this bias, we use a fixed effects estimator. To implement the fixed effects estimation, we take all variables in deviations from their time-series average and perform the OLS regression. The fixed-effects model can be specified as follows:

$$Y_{it} - \bar{Y}_i = (X_{it} - \bar{X}_i) \mathbf{b} + \nu_i + e_{it} - \bar{e}_i, \quad (2)$$

where \bar{Y}_i , \bar{X}_i and \bar{e}_i are within-in-groups averages of Y_{it} , X_{it} and e_{it} and ν_i are the fixed effects to be estimated. In order to obtain correct standard errors, we estimate our model with cross-section specific variables using OLS without intercept terms to measure common coefficients for our explanatory variables.

4. Empirical Results

Table 1 presents summary statistics for ownership and size variables, i.e. the means and standard deviations of foreign ownership shares expressed as a percentage (FORP), government ownership shares expressed as a percentage (GOVP), and the size variable proxied by the natural log of sales (LNSALE). Note that foreign ownership stakes, when present, are large and significantly higher than government stakes, which indicates more effective direct control. We also present some descriptive statistics for different subsets of firms, grouped according to firm ownership and size in Table 2. We use an independent-

samples t-test to compare the averages across observations in the subsamples. As Table 2 indicates, average investment is greater in companies in which foreign ownership exceeds 50%, at a significance level of 10%, and that their investment rate is less volatile.¹¹ Surprisingly, on average, companies with majority foreign ownership have significantly higher ratios of cash flow to total assets. These statistics indicate that foreign companies are not constrained in terms of internal financial resources and that they are able to invest in all profitable projects.

Table 1 here

The most striking result in Table 2 is that the market-to-book value of equity ratio is twice as high on average for majority foreign-owned companies. This result could follow from foreigners investing in firms with the best investment opportunities, which would be reflected in their stock price in addition to the value of their existing assets. Alternatively the presence of foreigners might increase the growth rate of these firms, perhaps because it decreases the cost of capital or improves access to the best technology. Finally, the value of non-foreign owned firms may be relative low, possibly because of the existence of more severe adverse selection or moral hazard problems. Although we are not able to interpret unambiguously this higher relative valuation of foreign owned firms, the difference is highly significant.

Table 2 here

Table 3 presents the main differences when companies are grouped according to size¹². On average, large companies have significantly higher total investment to total assets ratios¹³ and significantly higher ratios of cash flow to total assets. In contrast, the average market-to-book value, which serves as a proxy of Tobin's Q, is significantly lower for large companies. This observation suggests that smaller firms have more unrealized growth opportunities, perhaps because it is more difficult for them to achieve their desired level of investment.

Table 3 here

In our empirical specification, we consider the effect of an individual firm's corporate governance structure on its access to external capital. We also investigate whether the allocation of capital is sensitive to the market valuation of investment opportunities, following the approach in Scharfstein (1998). Table 4 reports the main results. All regressions indicate a strongly significant sensitivity of investment (TI) to cash flow (CF) at the 1% level and the coefficient is at times surprisingly large. Interestingly, the sign, significance, and size of the coefficients for the main explanatory variables are not affected much by introducing the governance variables. Hence, the evidence points to the presence of financial constraints even for this sample of large and well established firms.

In no regression is our proxy of Tobin's Q, i.e. MBE, significant. This may suggest that stock prices in Hungary are a poor measure of marginal profitability or that they reflect risk factors that are less relevant for investment decisions. We tried various alternative measures for the profitability of future investment, such as margins and profitability ratios, but these proxies were also insignificant. Another consistent result is that high leverage, proxied by the

ratio of beginning-of-period stock of debt to total assets (TD), depresses investment. This is consistent with the conventional wisdom that leverage has a negative effect on access to new capital. In Eastern European countries that experienced high inflation, the old debt was wiped out so that the presence of debt may signal a greater ability to attract credit. In Hungary inflation was never very high so that high debt appears to be a persistent burden¹⁴. In this sense, Hungary may resemble more a Western country than a still unstabilized transition economy.

The capital intensity of the firm, proxied by the ratio of beginning-of-period fixed assets to total assets (FA), is consistently positively correlated with investment, suggesting that industry differences are significant. We cannot pursue this idea further since we do not have a good industry classification for the enterprises in our sample. We ran regressions using year dummies to control for business cycles effects, but these annual dummies were not significant so that we do not report their results. However, this robustness test indicates that the investment equation is well specified.

Our main concern is the relative ease of financing for Hungarian firms versus foreign-controlled firms, so that we study whether these two groups exhibit a different sensitivity of investment to cash flow in Model 2 in Table 4. Specifically, we investigate whether the coefficient on cash flow for the foreign-controlled firms is positive. The coefficient of the foreign shareholdings dummy variable (FOR)¹⁵ is insignificant, whereas the coefficient on foreign shareholdings interacted with cash flow (FORCF) is significant. A Wald test establishes that the total coefficient of excess sensitivity of investment to internal finance for foreign-owned firms (CF+FORCF) is not significantly different from zero. Hence, we state

our strongest result that foreign-owned firms are completely financially unconstrained. Furthermore, the coefficient of excess sensitivity for all other firms is high.

In Model 3, we introduce foreign ownership as a continuous variable and test whether a larger percentage amount of foreign ownership (FORP) yields fewer financial constraints and find that the coefficient is not significant. The coefficient on foreign shareholdings interacted with cash flow (FORPCF) is negative and significant, suggesting that cash flow sensitivity is indeed decreasing with the foreign stake. Our results suggest that foreign investors have a positive governance effect, but we cannot state that the greater is foreign ownership, the lower is the financial constraint. Finally, in Models 2 and 3, we test whether the investment rate in foreign and domestically controlled firms is equally sensitive to market estimates of future profitability, as proxied by MBE. In both cases, the coefficients FORMBE and FORPMBE are insignificant. Thus, we find no evidence of differences in the relative quality of investment by foreign firms assessed by the Hungarian capital markets. These results confirm the presence of strong dualism in the Hungarian economy. In one group are enterprises that can rely on foreign governance and financial resources; thus, they are able to expand in an unconstrained manner. In the other group are domestic enterprises that are unable to raise sufficient external finance for their investment plans.

In Model 4 in Table 4, we consider whether the presence of a significant government ownership stake, proxied by the percentage of government ownership (GOVP), affects the level, allocation or financing of investment. No significant effect of government ownership is found. Firms with large state shareholdings do not invest significantly more, nor is there any evidence that they are less credit-constrained, than other firms. Either the Hungarian

government refrained from influencing state-owned banks to lend to these firms or the banks managed to retain enough independence to resist such pressure.

Table 4 here

In developed Western economies, larger enterprises often have better access to capital than do smaller ones. Table 5 reports the results of regressions in which we introduce a dummy to proxy firm size (SIZE)¹⁶. In the absence of controls for the governance structure in Model 1, the results in Table 5 indicate that large Hungarian companies are able to overcome financial constraints to some extent. The coefficient for size interacted with cash flow (SIZECF) indicates that larger firms have a lower sensitivity of investment to cash flow. Even more significantly, a Wald test indicates that the total coefficient on cash flow for this subset of firms is not significantly different from zero. We note that the coefficient of size interacted with MBE (SIZEMBE) is not significant. Hence, the investment rate in larger firms is not more sensitive to market estimates of the firms' future profitability, as proxied by MBE, than it is for smaller firms. By way of explanation, larger firms are better known and enjoy better relations with both financial institutions and investors so that they may have easier access to capital.

However, these results do not hold once control variables for ownership structure are introduced. In Model 2, the sensitivity of cash flow to investment is no longer different for larger firms, although it is for foreign-owned firms. A Wald test confirms that the total coefficient of cash flow for foreign-owned firms is not statistically different from zero. At the same time, the sensitivity of investment to cash flow is positive, on average, for all other

firms, and it is not lower for larger firms. Thus, once we control for foreign ownership, size is no longer a significant determinant of the ability of listed Hungarian firms to raise external finance; only foreign ownership matters¹⁷.

Table 5 here

Summarizing the main empirical results, we find evidence of strong dualism in the Hungarian economy. In one group there are firms that that can rely on foreign governance and access to external financial resources, which enables them to invest in profitable projects. The other group consists of domestically-owned firms, that face severe credit constraints. There is also some evidence that larger firms have better access to external funds than smaller ones, although the evidence is not indisputable.

5. Conclusions

Our evidence indicates that listed Hungarian firms exhibited an excess sensitivity of investment to cash flow during the first decade of transition. Hence, even the best known Hungarian firms faced severe credit constraints so that they could invest only to the extent that they were able to generate resources internally. Admittedly, this evidence may reflect hardened budget constraints that were necessary to wean firms from a tradition of easy external funding. A transitional stage of very tight financial constraints may build credibility for the stabilization policy, harden incentives, and stabilize both financial markets and bank balance sheets. Nonetheless, our results indicate that foreign-owned firms have higher market value, invest more, and are able to fund investment expenditures in excess of internal cash

flows. This confirms the existence of a strong dualism in Hungary. On one hand, enterprises that rely on foreign governance and foreign-financed investments are the driving force of the economy and are perceived by investors to suffer less from agency costs. On the other hand, most domestic firms appear to have limited access to capital markets, perhaps because they have not made the necessary structural changes.

Our results may also reflect weak development of domestic capital markets and corporate governance in Hungary. However, they do not support government intervention. Firms with large state shareholdings do not invest more and are no less credit-constrained than private firms without foreign owners. Although the largest listed Hungarian companies appear to be unconstrained, this result disappears once we control for the structure of ownership. Hence, even large Hungarian firms listed on the stock market did not achieve sufficient investor confidence in the first ten year of transition to attract sufficient external finance to fund their desired level of investment. Our results are consistent with the hypothesis that a reliable governance structure was not yet in place; however, these financial constraints may also be the result of a long period of hard budget constraints that were necessary to complete the process of financial transition.

Our results indicate that the accumulated stock of debt appears to depress the level of investment, which confirms the notion that the Hungarian financial system is imposing hard budget constraints on enterprises. Future research is required to determine whether the evolution of domestic markets and governance will grant Hungarian firms full access to capital markets.

Endnotes to Enterprise Finance and Investment in Listed Hungarian Firms

1 We thank Jerome Sgard, Joost Driessen, participants at the ACE workshop in Budapest, two anonymous referees and editor John Bonin for useful comments. We retain responsibility for all errors.

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2 Sgard (2001) provides evidence of higher productivity of foreign-owned firms, although this appears to be concentrated in export-orientated firms.

3 In Perotti (1996), the possibility of massive default endangering economic activity and social stability may induce reversion to reflationary policies of bailing out all arrears, which in turn justifies the *ex ante* inertial response and the creation of arrears. This model formalizes the notion of a too-many-to-fail strategy of resistance to adjustment (Mitchell, 1998).

4 Collective, indiscriminate bailouts of firm arrears funded by monetary emissions occurred in Russia in 1992 and 1993, in Romania in 1991 and 1993, and in Bulgaria in 1994.

5 The large bank bailout program led to large fiscal imbalances, which were not addressed fully until the March 1995 stabilization program.

6 In a related study of a transition economy, Perotti and Gelfer (2002) consider the controlling role of banks in Russian Financial-Industrial Groups. They distinguish between hierarchical Financial-Industrial Groups, in which a bank is in firm control, and industry groups, which are looser alliances without a common control structure. The authors find that investment is sensitive to internal finance for the non-hierarchical group firms, but they find a negative correlation between investment and cash flows in bank-led group firms. This result suggests extensive financial reallocation and the use of profitable firms as cash cows.

7 Tobin's Q is defined as the ratio of market value of the firm to the replacement value of its capital assets.

8 Following the practice in the literature, we experimented with alternative measures, namely profitability and margins on sales, and obtained essentially identical results.

9 Cash flow equals after-tax profit plus depreciation and thus records the actual value, as opposed to the accounting value, of the net inflow of cash in advance of investment. The stock measure of cash, CASH, equals cash held by the firm at the beginning of the period when investment decisions are made.

10 Moyen (2002) argues that, since unconstrained firms will raise some debt to fund their investment, leverage may be included because it proxies indirectly for investment opportunities.

11 This is consistent with the notion that these firms can smooth their investment spending due to their access to external funding.

12 The set of the largest companies is defined as those whose sales exceed the median value of sales for the whole sample.

13 This result disappears in multivariate regressions when we control for ownership structure.

14 High debt could also be a lagging indicator of the lack of profitability; it could also be correlated negatively with investment opportunities.

15 The dummy variable equals 1 if the share of foreign ownership exceeds 50%.

16 The dummy variable equals 1 if the natural logarithm of sales for a company exceeds the median value of the natural logarithm of sales of the whole sample.

¹⁷ The results do not change significantly when the log of sales is used rather than the size dummy.

Table 1: Summary Statistics for Ownership and Size Variables

	Foreign Ownership (FORP)	Government Ownership (GOVP)	Size (LNSALE)
Total Number of Observations	184	184	184
No. of Observations with Presence of Foreign or Government Ownership	167	88	Not applicable
Mean value	67.5%	14.33%	14.73
Standard deviation	27.04%	20.13%	2.27

Note: Only continuous variables are included.

Table 2: Descriptive Statistics for Subsamples of Companies Based on Ownership

	Total Investment to Total Assets Ratio (TI)	Market to Book Value of Equity (MBE)	Total Debt to Total Assets Ratio (TD)	Fixed Assets to Total Assets Ratio (FA)	Cash Flow to Total Assets Ratio (CF)
FOREIGN OWNERSHIP GREATER THAN 50%					
N	116	116	116	116	116
Average	0.1126	2.6881	0.2567	0.5770	0.1079
Standard Deviation	0.1676	3.2044	0.1346	0.1636	0.0876
FOREIGN OWNERSHIP LESS THAN OR EQUAL TO 50%					
N	68	68	68	68	68
Average	0.0375	1.3356	0.2330	0.5838	0.0702
Standard Deviation	0.3315	1.4012	0.1672	0.1803	0.0997
t-test for equality of means	1.7420*	3.948***	0.9970	-0.257	2.589**

Note: The superscripts *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 3: Descriptive Statistics for Sub-samples of Companies Based on Size

	Total Investment to Total Assets Ratio (TI)	Market to Book Value of Equity (MBE)	Total Debt to Total Assets Ratio (TD)	Fixed Assets to Total Assets Ratio (FA)	Cash Flow to Total Assets Ratio (CF)
LARGE COMPANIES					
N	93	93	93	93	93
Average	0.1252	1.6624	0.2605	0.5613	0.1355
Standard Deviation	0.1881	1.3091	0.1381	0.1593	0.0673
SMALL COMPANIES					
N	91	91	91	91	91
Average	0.0436	2.7257	0.2351	0.5981	0.0515
Standard Deviation	0.2843	3.6227	0.1562	0.1783	0.0981
t-test for equality of means	2.2890**	-2.6360***	1.168	-1.473	6.76***

Notes:

- i. Large companies are companies for which the natural logarithm of sales exceeds the median value of the natural logarithm of sales for the whole sample.
- ii. The superscripts *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Table 4: Ownership Effects

	Model 1	Model 2	Model 3	Model 4
MBE	2.026E-03 (.292)	6.867E-02 (.672)	2.169E-02 (.689)	-1.90E-02 (-.656)
TD	-2.331 (-7.832)***	-2.804 (-10.932)***	-2.484 (-8.579)***	-2.282 (-7.029)***
LNSALE	.207 (.249)	8.281E-02 (.119)	.416 (.513)	.227 (.267)
FA	.557 (2.937)***	1.059 (5.468)***	.578 (3.130)***	.505 (2.139)**
CF	2.444 (5.975)***	4.867 (11.002)***	2.616 (6.519)***	2.588 (5.109)***
FORMBE		-7.026E-02 (-.686)		
FORCF		-6.659 (-8.838)***		
FOR		-.135 (-.234)		
FORPMBE			-.168 (-.657)	
FORPCF			-13.185 (-3.883)***	
FORP			-2.447 (-.609)	
GOVPMBE				-.294 (-.778)
GOVPCF				-8.960 (-.537)
GOVP				2.272 (.314)
Adj. R ²	0.317	0.526	0.398	0.309
F Statistic	17.451***	25.533***	13.972***	10.881***
Tests on (in)equality of coefficients ^a		Can't reject H ₀ at 5%		

Notes:

- i. The dependent variable is the ratio of total investments to total assets (TI).
- ii. The number of observations is 184.
- iii. The regression is estimated using the fixed effects model. For each coefficient the t-values are reported in parentheses.
- iv. The superscripts *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
- v. No tests on (in)equality of coefficients are performed if one of the coefficients is insignificant.
- vi. The null hypothesis in Model 2 is: CF + FORCF = 0

Table 5: Impact of Enterprise Size and Ownership

	Model 1	Model 2
MBE	-6.449E-02 (-1.438)	2.576E-02 (.247)
TD	-2.492 (-8.344)***	-2.890 (-11.21)***
FA	.641 (3.300)***	1.104 (5.705)***
CF	2.703 (6.526)***	4.943 (11.191)***
SIZE	.538 (.681)	.311 (.384)
SIZEMBE	6.321E-02 (1.392)	6.406E-02 (1.644)
SIZECF	-4.921 (-2.466)**	-2.268 (-1.320)
FOR		-.330 (-.468)
FORMBE		-9.191E-02 (-.891)
FORCF		-6.432 (-8.411)***
LNSALE		
LNSALEMBE		
LNSALECF		
Adj. R ²	0.341	0.533
F Statistic	14.080***	21.198***
Tests on (in)equality of coefficients	Can't reject H ₀ at 5%	Can't reject H ₀ at 5%

Notes:

- i. The dependent variable is the ratio of total investments to total assets (TI).
- ii. The number of observations is 184.
- iii. The regression is estimated using the fixed effects model. For each coefficient the t-values are reported in parentheses.
- iv. The superscripts *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.
- v. No tests on (in)equality of coefficients are performed when one of the coefficients is insignificant.
- vi. The null hypotheses in Model 1 and Model 2 are $CF+SIZECF=0$ and $CF+FORCF=0$, respectively.

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